

Claims

1. An electrical coil module of planar type preferably manufactured by means of printed circuit techniques on a generally flat substrate (21), characterised in that a first layout (20) of conducting material constituting a first electrical conductor having an input terminal (23), is arranged on one side of said substrate (21), a second layout (20') of conducting material constituting a second electrical conductor having an output terminal (24), is arranged on the opposite side of said substrate, said first and second conductors are connected by means an electrical connection (22) through the substrate (21), so that an electrical voltage connected between the input and output terminals of the coil module will drive a current from one terminal through the conductor on one side of the substrate via connection (22) through the substrate and the conductor on the other side of the substrate to the other terminal.
2. A pair of coil modules according to claim 1 defining a first and a second module, characterised in that one side of the first module is provided with a layout of conducting material which is a mirrored version of the layout of the conducting material of one side of the second module, the other side of the first module is provided with a layout of conducting material which is a mirrored version of the layout of the conducting material of the other side of the second module.
3. An electrical coil comprising at least two coil modules according to claim 1 or 2 characterised in that, said modules are superimposed and clamped together to create a flat coil in which the respective coil modules are electrically connected in parallel.

WO 00/54292

PCT/EP00/00789

4. An electrical coil according to claim 3, characterised in that said modules are separated by means of an isolation element.

5. An electrical coil according to claim 2 and 3, characterised in that it comprises at least one pair of modules according to claim 2 said modules are superimposed without intermediate isolation element.

6. An actuation mechanism of the Thompson type comprising an energising coil (7), a co-operating disk (8) and a shaft (10) transferring the movement of the disk (8) characterised in that said coil is of the type defined in any of the claims 3 to 5.

7. An electromechanical circuit breaker comprising an actuation mechanism of the Thompson type, a pair of fixed contact elements (4) and a moving contact element (5) characterised in that said actuation mechanism is of the type defined in claim 6.

8. An electromechanical circuit breaker according to claim 7 characterised in that said moving contact element (5) is arranged on a pivoting arm (11).

9. A hybrid circuit breaker comprising an electromechanical circuit breaker according to claim 7 or 8 and a static circuit breaker connected in parallel characterised in that said static circuit breaker comprises a diode bridge (D1-D4) connected in parallel over the mechanical contacts (4, 5) of the electromechanical circuit breaker the diagonal of which bridge is including at least one IGCT type thyristor (T1, T2) connected in parallel with a MOV (6).

10. A hybrid circuit breaker according to claim 9, characterised in that a second MOV (6') in series with a resistor (25) is connected in parallel with said MOV (6).